

CLAIMS

What is claimed is:

1. A drill insert comprising:

a drill insert body having a first end opposite a second end, a first face side opposite and parallel to a second face side, and a first land side opposite a second land side, the first and second land sides formed between the ends and the face sides; and

a margin formed on a portion of each land side, the margin having a leading side and a trailing side, wherein at least one of the leading side and the trailing side is formed as a helix.

2. The drill insert of claim 1, wherein the margin is formed with a constant arcuate width between the leading side and the trailing side such that both the leading side and the trailing side are formed as a helix.

3. The drill insert of claim 1, wherein the leading side of each margin is formed as a helix and a helical flute is formed adjacent the leading side of each margin.

4. The drill insert of claim 3, wherein at least two apertures are formed through each face side of the drill insert body, and

wherein the helical flutes are formed radially outward of the apertures.

5. The drill insert of claim 1, wherein the first end of the drill body is a generally planar surface having at least one recess formed in the first side.
6. The drill insert of claim 1, wherein the second end comprises at least two cutting edges formed transverse to each other.
7. The drill insert of claim 1, wherein the at least two cutting edges are curved.
8. The drill insert of claim 6 further comprises a chip breaker formed through each cutting edge.
9. The drill insert of claim 7, wherein each cutting edge has a lip formed adjacent thereto wherein the lip is parallel to the cutting edge.
10. The drill insert of claim 1, wherein the drill insert body is comprised of a sintered metallic hard material.
11. The drill insert of claim 1, wherein the drill insert body is comprised of a material selected from the group consisting of carbide, cermet, ceramic, monocrystalline and polycrystalline diamond, and boron nitride.
12. The drill insert of claim 1, wherein the drill insert body is comprised of high speed steel.

13. A drill insert comprising:

a drill insert body having a first end opposite a second end, a first face side opposite and parallel to a second face side, and a first land side opposite a second land side, the first and second land sides formed between the ends and the face sides;

wherein the first end of the drill body is a generally planar surface having at least one recess formed in the first side;

wherein the second end comprises at least two cutting edges formed transverse to each other;

at least two apertures formed through each face side of the drill insert body; and

a margin formed on a portion of each land side, the margin having a leading side and a trailing side, wherein at least one of the leading side and the trailing side is formed as a helix.

14. The drill insert of claim 13, wherein the margin is formed with a constant arcuate width between the leading side and the trailing side such that both the leading side and the trailing side are formed as a helix.

15. The drill insert of claim 13, wherein the leading side of each margin is formed as a helix and a helical flute is formed adjacent the leading side of each margin.

16. The drill insert of claim 15, wherein the helical flutes are formed radially outward of the apertures.

17. The drill insert of claim 13, wherein the at least two cutting edges are curved.
18. The drill insert of claim 13 further comprising a chip breaker formed through each cutting edge.
19. The drill insert of claim 13, wherein each cutting edge has a lip formed adjacent thereto wherein the lip is parallel to the cutting edge.
20. A drilling tool assembly comprising:
 - a holder having a first end and a second end, wherein the second end comprises a shank portion adapted to be fixedly attached in a drilling machine, wherein the first end comprises a holder slot having a bottom seating surface over at least a portion of the holder slot and at least one attachment arm positioned on each side of the holder slot, wherein each attachment arm has at least one aperture formed therein;
 - a drill insert comprising a drill insert body having a first end opposite a second end, a first face side opposite a second face side and a first land side opposite a second land side, the first and second land sides formed between the ends and the face sides, wherein the first end of the drill body is a generally planar surface, wherein the second end comprises at least two cutting edges formed transverse to each other, at least two apertures formed through each face side of the drill insert body, and a margin formed on a portion of each land side, the margin having a

leading side and a trailing side, wherein at least one of the leading side and the trailing side is formed as a helix.

21. The drilling tool assembly of claim 20, wherein the margin of the drill insert is formed with a constant arcuate width between the leading side and the trailing side such that both the leading side and the trailing side are formed as a helix.

22. The drilling tool assembly of claim 20, wherein the leading side of each margin is formed as a helix and a helical flute is formed adjacent the leading side of each margin.

23. The drilling tool assembly of claim 20, wherein the helical flutes are formed radially outward of the apertures.

24. The drilling tool assembly of claim 20, wherein the holder slot includes a locating boss extending from the bottom seating surface and the first end of the drill insert body has at least one recess which cooperates with the locating boss of the bottom seating surface to allow the insert to be seated against the bottom seating surface.

25. The drilling tool assembly of claim 20, wherein the holder includes at least one flushing channel.

26. The drilling tool assembly according to claim 20, wherein a fastening mechanism engages each aperture of the at least two apertures of the drill insert and a corresponding aperture of the at least one aperture in each clamp arm for securing the drill insert in position within the holder slot.

27. The drilling tool assembly according to claim 26, wherein the at least one aperture in each clamp arm is offset from the corresponding aperture in the drill insert at least to urge the drill insert against the bottom seating surface of said holder slot.